

2008 Census of Technology Report



“Making a Positive Difference through Education and Service”
Dr. D. Kent King, Commissioner

September 2008

I. Introduction

The Census of Technology (COT) is designed to assess Missouri's continuing investment in K-12 education technologies and to help guide forward efforts. It provides important data for the Department of Elementary and Secondary Education (DESE) to share with state and national decision-makers to increase public awareness and advance public policy and support for education technology. It provides local school districts with data to help identify needs and develop strategies to facilitate school improvement processes and compare district progress with statewide data. The COT is aligned with the *Missouri Education Technology Strategic Plan* (METSP) and is a primary data source for measuring progress toward meeting the state goals and objectives.

A technology survey has been collected annually since 1997. Prior to 2001, DESE contracted with the University of Missouri's Office of Social and Economic Data Analysis to administer the project. In 2001, the census was incorporated into the April cycle of DESE's online core data collection system. The 2001 COT was the first to be completed by all districts; data collected prior to 2001 were adjusted to estimate the entire population.

The COT has two parts: a district-level survey and a school building-level survey. The District Census assesses the levels of planning and training for the district as a whole and concentrates on hardware, software, and levels of connectivity for the administrative buildings and offices. Completed by district-level administrators and/or technology specialists, the District Census includes information for all Missouri school districts and charter LEAs.

The Building Census assesses planning and training needs for individual school buildings and focuses on hardware and levels of Internet connectivity in computer labs, libraries, and classrooms. Completed by building-level administrators or technology contacts, the Building COT collects data from preschools, elementary schools, middle schools, junior high schools, high schools, area career centers, and the majority of charter schools (those in operation at least one full year prior to the Census date). Exempted buildings include juvenile centers, special education cooperatives, buildings where attendance is reported at another building (such as a gifted center), or other buildings with no enrollment data.

The annual *Census of Technology Report* arranges current data for both the district and building levels (related to technology planning, technology professional development, hardware and support, Internet connectivity-distance learning, technology usage, and technology funding) and compares current data with information from previous years. Aggregated responses for the district and building census forms are provided in the Appendix.

This report is one of several documents that examine the use and effectiveness of education technologies in Missouri. Other evaluation information can be found in the Missouri Education Technology Strategic Plan reports, eMINTS Program research reports, annual technology program reports, project descriptions, and annual evaluation narratives – all of which may be accessed from the Instructional Technology website at <http://dese.mo.gov/divimprove/instrtech>.

For additional information regarding the Census of Technology, contact the Instructional Technology section by telephone at 573-751-8247 or email at instrtech@dese.mo.gov.

II. Table of Contents

I. Introduction	2
II. Table of Contents	3
III. Executive Summary	5
A. Overview	5
B. Select Findings	6
IV. Detailed Findings	11
A. District Census	11
1. Technology planning	11
2. Technology professional development	11
3. Hardware and support	13
4. Technology usage	15
5. Technology funding	17
B. School Building Census	18
1. Technology planning	19
2. Technology professional development	19
3. Hardware and support	22
4. Internet connectivity / Distance learning	28
5. Technology usage	31
V. Appendix	37
A. Census Surveys with Response Totals	37

Turn Page for Section III: Executive Summary

III. Executive Summary

A. Overview

The **2007-08 Census of Technology** continued to show steady gains during the past school year. While modest, the gains represent consistent improvement in Missouri's schools with regards to technology readiness and use. Despite another year of sluggish economies at the state and local levels and another year of not funding the Technology Acquisition Grant Program, Missouri schools continued to improve access to education technologies for administrators, faculty, staff, and students, and report increases in their quality uses of those technologies.

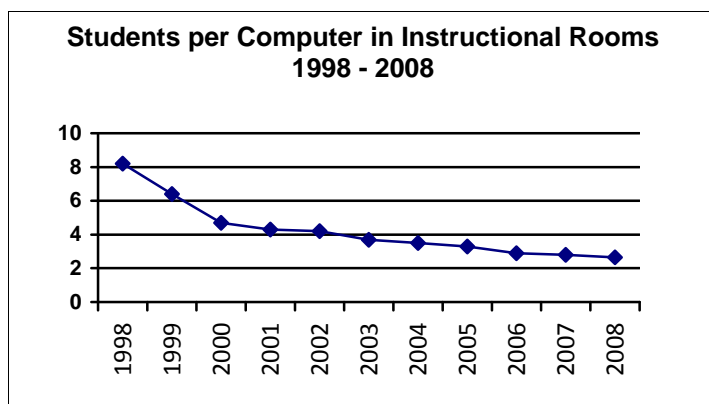
Current-year data indicate that more schools are connected to one another and the Internet, and more educational technologies are provided for teachers and students. Students, teachers, and administrators continue to become better skilled in using education technologies and, more importantly, continue to increase the frequency in which they use the technologies in meaningful ways.

INTERNET ACCESS

- 2,225 / 99 percent of school buildings have **partial T1 or higher Internet connectivity**, with 2,071 / 93 percent having connectivity bandwidths greater than T1.

COMPUTER ACCESS

- 362,638 computers** (desktops, laptops, and handhelds) are located in the buildings, with 337,643 / **93 percent located in instructional rooms**: 295,756 / 57 percent in classrooms, 105,709 / 29 percent in computer labs, and 26,178 / 7 percent in library media centers.
- On average, there are **2.47 students per computer** (all computers, located across all buildings), compared to 2.61 in 2007, 2.73 in 2006, 3.09 in 2005, 3.26 in 2004, 3.29 in 2003, and 3.8 in 2002 and 2001.
- There are **2.65 students per instructional computer** (located in instructional rooms), compared to 2.81 in 2007, 2.94 in 2006, 3.3 in 2005, 3.48 in 2004, 3.66 in 2003, 4.21 in 2002, 4.34 in 2001, 4.65 in 2000, 6.4 in 1999, and 8.15 in 1998.
- There are **4.35 students per classroom computer**, compared to 4.70 in 2007, 4.88 in 2006, 5.55 in 2005, 5.89 in 2004, and 6.42 in 2003).



➤ ***The number of students per computer in instructional rooms has decreased from 8.15 students in 1998 to 2.65 students in 2008.***

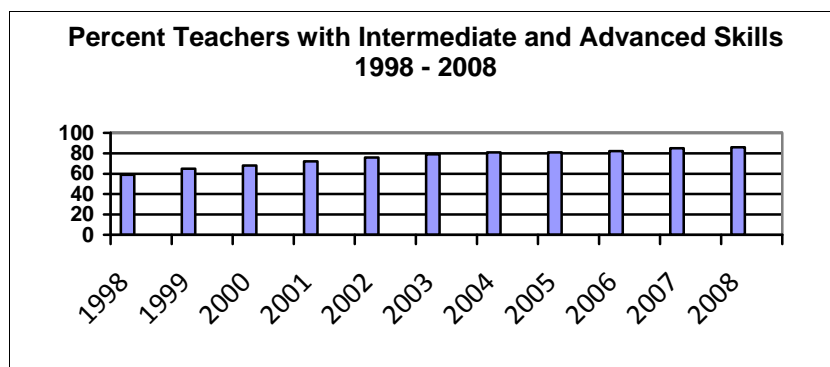
PRINCIPAL TECHNOLOGY SKILLS

- Approximately **95 percent of principals/building administrators have intermediate and/or advanced technology skills**, compared to 93 percent in 2007, 92 percent in 2006, 91 percent in 2005, 92 percent in 2004, 90 percent of principals in 2003, and 82 percent in both 2002 and 2001.
- **98 percent of the principals routinely use email**, the same percent noted in 2007, compared to 97 percent reported 2003 through 2006, 92 percent in 2002, and 74 percent in 2001.
- **84 percent of principals routinely conduct online research**, compared to 82 percent in 2007, 81 percent in 2006, 79 percent in 2005, 80 percent in 2004, 79 percent in 2003, 69 percent in 2002, and 58 percent in 2001.

TEACHER TECHNOLOGY SKILLS

- About **80 percent of teachers routinely use educational software**, compared to 79 percent in 2007, 76 percent in 2006, 78 percent in 2005 and 2004, 76 percent in 2003, 71 percent in 2002, and 59 percent in 2001.
- **77 percent of teachers routinely use technology for lesson plan preparation**, compared to 71 percent in 2007, 68 percent in 2006, 66 percent in 2005 and 2004, 64 percent in 2003, 59 percent in 2002, and 45 percent in 2001.
- **86 percent of teachers have intermediate and/or advanced technology skills**, compared to 84 percent in 2007, 82 percent in 2006, 81 percent in 2005 and 2004, 79 percent in 2003, 76 percent in 2002, and 72 percent in 2001.

➤ *The percent of teachers with intermediate and advanced technology skills has increased from 59 percent in 1998 to 86 percent in 2008.*



STUDENT TECHNOLOGY SKILLS

- On average, **80 percent of students routinely use educational software**, the same percent reported since 2003.
- **92 percent of eighth-grade students are technology literate**, up from the 90 percent reported 2005 through 2007.

B. Select Findings

TECHNOLOGY PLANNING

- **All districts and most charter LEAs have state-approved technology plans**

- **2,231 / 99 percent of schools have building technology plans**, either as stand-alone plans or incorporated in district plans

TECHNOLOGY PROFESSIONAL DEVELOPMENT

- **Over 94 percent of districts have board-approved education technology standards**
 - 84 percent have locally developed standards
 - 46 percent have adopted the National Educational Technology Standards (a jump from the 42 percent reported in 2007 and 35 percent in 2006)
 - 92 percent have standards for middle school/junior high students (grades 6-8), 90 percent for students in grades 3-5, 86 percent for PreK-2 elementary students, and 75 percent for high school students (grades 9-12) – all slightly lower than the percentages reported in 2007
 - 86 percent have standards for teachers, 84 percent for school administrators, and 75 percent for support services staff
- **At least 74 percent of staff have intermediate and/or advanced technology skills:**
 - 95 percent of school building administrators
 - 86 percent of teachers
 - 74 percent of school services staff
- **Over 1,500 teachers have participated in the Comprehensive eMINTS** professional development program for teachers; over 100 individuals are trained as eMINTS Education Technology Specialists

HARDWARE AND SUPPORT

- The **median district provides 1.00 FTE for technical maintenance and support**
 - School building technical support was most likely provided by district staff, followed by school certificated staff and other school staff
- **1-3 working days is the typical time-frame for resolving technical problems and repairs**

INTERNET CONNECTIVITY AND DISTANCE LEARNING

- **91 percent of districts have district-managed networks, connecting all district buildings**
- **All district networks support administrative systems:**
 - accounting/payroll – 98 percent of districts
 - student attendance – 95 percent of districts
 - email/communications – 95 percent of districts
 - library catalog – 91 percent of districts
 - grade books – 89 percent of districts
 - food service – 87 percent of districts
 - discipline reports – 85 percent of districts
- **92 percent of school buildings have T1 Internet connectivity or higher**
- **81 percent of buildings support distance learning systems**
 - noninteractive, web-based online instruction – 1,158 buildings
 - cable television – 1,127 buildings
 - interactive television – 426 buildings
 - desktop videoconferencing – 342 buildings
 - satellite reception – 304 buildings

TECHNOLOGY USAGE

- **99 percent of districts report that technology is integrated into core curriculum:**
 - 97.8 percent – communications arts
 - 96.5 percent – science
 - 95.3 percent – mathematics
 - 93.8 percent – social studies
- **Almost all districts (97%) provide email accounts to staff:**
 - 97 percent – school administrators
 - 96 percent – teachers
 - 92.5 percent – other district staff
- **Few districts provide email accounts to students:**
 - 132 – high school students
 - 60 – middle school students
 - 36 – students in grades 3-5
 - 13 – students in PreK-2
- **Teachers and students routinely use email and educational software;** few (but increasing numbers) use selected online resources such as EBSCOhost

Buildings estimate the following routine use of technology, by application and user type:

<i>Application</i>	<i>Administrators</i>	<i>Teachers</i>	<i>Students</i>
Educational software	49%	80%	80%
Email	98%	97%	14%
EBSCO host	16%	25%	23%
Electronic encyclopedia	17%	34%	36%
Newsbank	9%	14%	12%

- **Administrators, teachers, and students routinely use technology to produce print and multimedia products and conduct research**

Buildings estimate the following routine uses of technology, by function and user type:

<i>Function</i>	<i>Administrators</i>	<i>Teachers</i>	<i>Students</i>
Produce media, web, or multimedia products	66%	64%	50%
Produce written or print products or presentations	84%	84%	63%
Communicate with peers, experts, others	96%	93%	25%
Communicate with parents and students	88%	81%	17%
Conduct online research	84%	81%	61%
Participate in online courses (this year)	14%	17%	4%
Manage student records	89%	86%	Na
Track student performance	88%	86%	Na
Assess student performance	78%	82%	Na
Deliver and present instruction	44%	73%	Na
Prepare lesson plan(s)	Na	77%	Na

- **Building-level leadership and support is provided to help teachers integrate technology:**
 - library media specialist – 62 percent of buildings
 - teacher – 56 percent of buildings
 - school administrator – 49 percent of buildings
 - district technology staff – 42 percent of buildings
 - instructional technology specialist – 38 percent of buildings

- In the typical building, **65 percent of the teachers fully integrate technology into the curriculum**
- **98 percent of buildings have one or more technology-mediated feedback systems:**
 - email – 2,156 buildings – 96 percent
 - voice mail – 1,345 buildings – 60 percent
 - automated absentee calling systems – 574 buildings – 26 percent
 - electronic bulletin board – 553 buildings – 25 percent
 - homework hotlines via the web – 383 buildings – 17 percent
 - listserv – 338 buildings – 15 percent
 - homework hotlines via the telephone – 267 buildings – 12 percent

TECHNOLOGY FUNDING

- **Districts spent \$162.6 million for technology-related activities and purchases:**
 - Average budget – \$295,093
 - Median budget – \$55,000

Turn Page for Section IV: Detailed Findings

IV. Detailed Findings

This section of the *Census of Technology Report* details all current district- and building-level data, compares current data with previous years' data, and makes note of trends and/or anomalies found in data from the last several years.

A. District Census

In total, 550 districts (523 Missouri school districts and 27 charter LEAs) completed the COT in spring 2008. The District Census is a quick survey, comprised of 11 items that address technology planning, standards, administrative systems and support, and budgeting. See Appendix A for copies of the district and school building surveys, completed with aggregated data.

Even with the continued loss of state funding (i.e., the Technology Acquisition Grant or TAG program), district responses to the COT indicate continued progress in technology readiness and use. Missouri districts appear to be making effective use of technology for administrative purposes, managing networks and systems that help improve district administration, data management, and communication.

TECHNOLOGY PLANNING

The district-level COT examines the presence of a board-approved and state-approved long-range education technology plan. A school district's long-range technology plan provides a road map for how the district will implement strategies that promote the district's mission, advance its comprehensive school improvement plan, and improve teaching and learning through the use of education technologies. DESE began approving technology plans in 1997 as a requirement for the E-rate program. Beginning in 1999, a state-approved technology plan became a requirement for participation in the state's technology grant programs and the MOREnet Technology Network Program. With the passing of the federal No Child Left Behind Act in 2001, DESE developed the 2002-2006 Missouri Education Technology Strategic Plan and updated accordingly the scoring criteria used to approve district education technology plans. The district technology plan approval process was revised again in 2008 to align with Department's new electronic Plan and electronic Grants system (ePeGs) and the 2007-2011 Missouri Education Technology Strategic Plan.

Early district technology plans dealt mostly with hardware and equipment and did little to address integration, student learning, or technology professional development. Now plans are much more comprehensive, as a result of the state plan and the scoring criteria for local plans both focusing on the development of plans that align with comprehensive school improvement plans and promote effective teaching strategies, student achievement, and adequate infrastructure and technical support.

Item 1 – State-approved technology plans

All districts have state-approved district technology plans. All district plans are approved using the scoring guide developed in 2002 in response to the No Child Left Behind Act and the 2002-06 Missouri state plan.

TECHNOLOGY PROFESSIONAL DEVELOPMENT

Professional development is a critical factor in teachers using technology in meaningful and effective ways. In November of 1997, the State Board of Education established policy that required buildings to allocate amounts equal to 20 percent of state technology grant funds for technology-related training. The policy went into effect for the 1998-1999 school-year. The

Title II.D (Ed Tech) Program, begun in 2002-2003, requires that 25 percent of formula and/or competitive grant funds be earmarked for professional development.

Data collected over the previous years indicate that teachers are increasingly interested in professional development sessions that address how to integrate technology into curriculum and instructional teaching strategies. Professional development is most effective when tied to comprehensive school improvement plans and to local, state, and national educational technology standards. The Missouri technology plan endorses the National Educational Technology Standards (NETS) for students, teachers, and school administrators developed by the International Society for Technology in Education (ISTE).

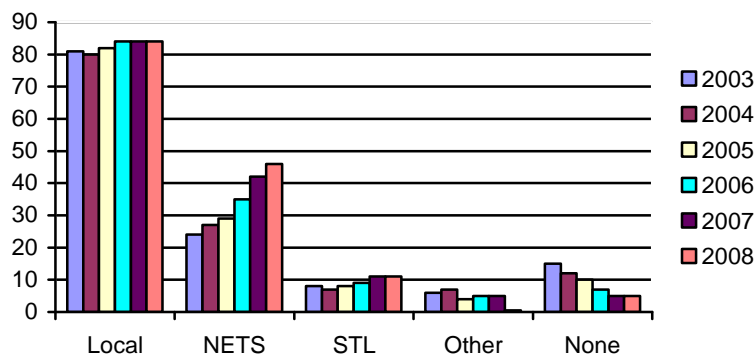
Item 2 – Educational technology standards

Added to COT in 2003, item two asked about the educational technology standards in place in the district. Standards provide guidelines for developing curriculum and guiding teacher and student behavior; they define a common agreement on what ought to be taught or learned. Also, educational technology standards serve as guidelines for planning technology-based activities in which students achieve success in learning communication and life skills.

In 2008, the vast majority of districts report having board-approved educational technology standards. Figure 1 shows that 84 percent (463) districts have standards developed by the district, 45.5 percent (250) have adopted the National Educational Technology Standards, and 11 percent (60) have adopted the Standards for Technological Literacy (STL) endorsed by the International Technology Education Association (ITEA). Only 26 districts (5 percent) reported having no board-approved standards. The 2008 data closely parallel the data collected 2003 through 2007, but also show a modest increase in the number of districts adopting the NETS (as proposed in the state plan) and a decrease in the number of districts having no board-approved standards. Note that many of those districts adopting the NETS also incorporate locally developed standards.

Figure 1

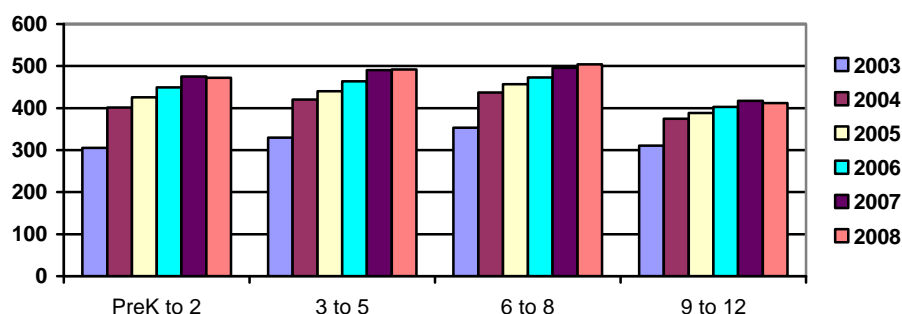
**Percent Districts with Education Technology Standards
by Standard Type, 2003 – 2008**



Over ninety percent of districts reported having technology standards for students: 86 percent (472 districts) have established standards for PreK-2 students, 90 percent (492) have standards for students in grades 3-5, 92 percent (504) have standards for middle school students, grades 6-8, and 75 percent (412) have standards for high school students. One hundred percent of districts that house area career centers also indicate having standards for career center students. The number of districts with established technology standards has increased for all grade levels each year since 2003, as indicated in Figure 2.

Figure 2

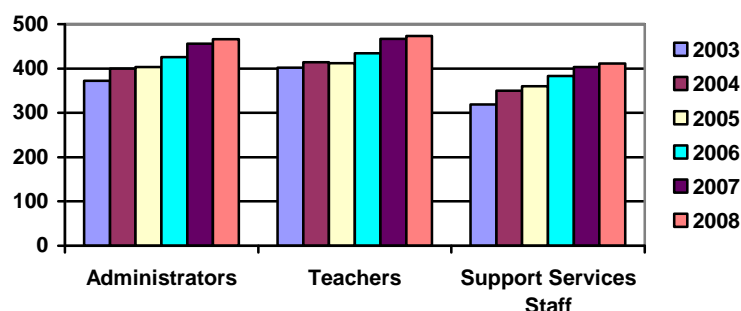
**Number Districts with Student Technology Standards
by Grade Spans, 2003 – 2008**



About five out of six districts (84 percent) report having technology standards for district employees: 86 percent (473 districts) have standards for teachers, 85 percent (466) have standards for administrators, and 74 percent (411) have standards for support services staff. Similar to the status of student standards, the number of districts that report having educational technology standards for school employees has increased from 2003 to 2008, as illustrated in Figure 3 below.

Figure 3

**Number Districts with Technology Standards for Faculty/Staff
by Employee Type, 2003 – 2008**



HARDWARE AND SUPPORT

Technology integration is affected by the kinds of hardware and software that districts deploy and how well it is maintained. The district COT looks at who is responsible for technology hardware and support in the district, the administrative technologies in place in the district, and computer networking. Access to current technologies is an essential condition for district operations as well as for teaching and learning. Technology is essential to effective and efficient district administration, data management, and communications. Having district technology staff – to help plan, purchase, install, and support district technologies – is also important.

Item 3 – District technology staff

Item three asked districts to estimate the total number of district-level, full-time equivalent (FTE) staff responsible for technical maintenance and support. Table 3 presents data collected from 2006 to the present. As indicated, the proportion of districts employing technology directors has remained at or near 94 percent, averaging 1.0 FTE. The percent of districts contracting for

technology services have grown from 30 to 39 percent, while the average number of hours has fluctuated.

Table 3

District Technical Support, by Support Provider, 2006 – 2008

<u>Employee Type</u>	<u>Buildings</u>			<u>Non-Employee Type</u>	<u>Buildings</u>		
	<u>2006</u>	<u>2007</u>	<u>2008</u>		<u>2006</u>	<u>2007</u>	<u>2008</u>
Percent Districts	94%	93%	94%	Percent Districts	30%	36%	39%
Average (FTE)	1.0	1.0	1.0	Average (Hours)	200	271	80

Item 4 – District-supported administrative systems

Added in 2004, item four examines district administrative systems – electronic programs that are used to expedite the storage and use of data and information. Table 5 details the systems supported by a majority of the districts. Almost all districts have accounting systems and support automated student attendance, electronic mail (email), grade book, and library catalog. Since 2004, there has been a marked increase in the number of districts adding student discipline, grades, IEP management, and health services.

Table 5

District Administrative Systems, 2004 – 2008

<u>System Type</u>	<u>Number of Districts</u>					<u>Increase since 2004</u>
	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	
Accounting/budgeting/payroll	511	513	517	532	539	28
Student attendance	461	488	498	512	524	63
Communication/email	452	478	489	507	522	70
Food service	431	420	451	470	476	45
Library catalog	432	475	491	504	502	70
Grade book	Na	393	431	467	489	96
Discipline	355	402	420	458	468	113
Health service	346	374	402	421	442	96
IEP management	345	382	401	427	443	97
Student performance	304	341	365	379	392	88

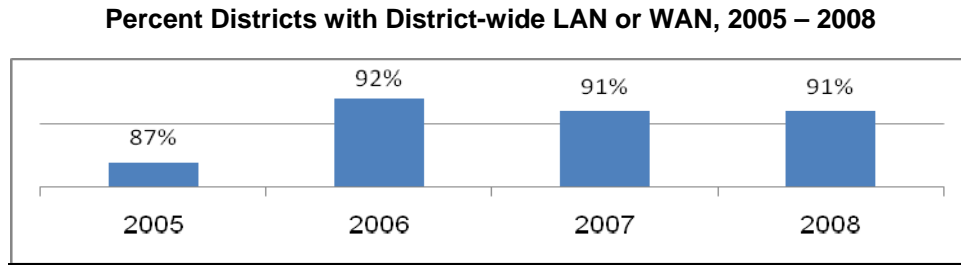
On the other hand, fewer than half of the districts report systems that support school safety (32 percent), teacher evaluation (36 percent), instructional management (36 percent), human resources (42 percent), extracurricular scheduling (42 percent), and distance education (45 percent) – although all these showed slight growth since 2006. [See Appendix for full listing of administrative systems.]

Item 5 – District networks

The use of an interconnected system of computers and peripheral equipment enables connected users to communicate and share information and resources. Revised in 2005, item five assumes that districts have computer networks and asks how many districts have all buildings in the district connected through a district wide (WAN) or local area (LAN) network.

Similar to the jump in district-supported administrative systems, more districts (and charter LEAs) have a district-wide LAN or WAN. In 2008, 91 percent of 523 districts and 27 charter LEAs have all buildings connected, compared to 91 percent of 524 districts and 16 charter LEAs in 2007, and 92 percent of districts in 2006. Figure 6 compares the percentages noted since 2005.

Figure 6



TECHNOLOGY USAGE

Previous items examined technology readiness, with integrating technology as the goal of making technology available and accessible. Technology usage items look at technology integration, the incorporation of technology resources and technology-based practices into daily routine – of districts, school employees, teachers, and students. At the district level, technology usage items check to see how districts support a culture that embraces technology and accepts technology as natural to the business of everyday work. Major goals of the Title II.D Program call for all districts to have technology integrated into core curricula and for students to be technology literate by the end of the eighth grade.

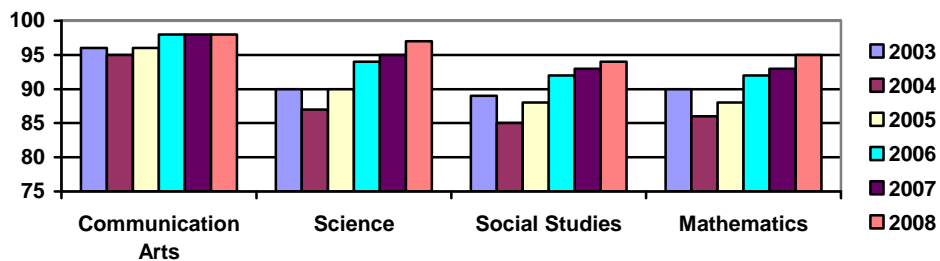
Item 6 – Curriculum integration

In Missouri, technology integration is defined as “written curriculum that incorporates content and processes (teaching, professional development, and assessment) related to technology resources, equity of resources, research and workplace readiness skills. Technology supports overall goals and objectives and makes possible and enhances the use of multiple instructional resources and teaching strategies (e.g., use of project-based learning, collaborative and cooperative learning, ongoing questioning, expert assistance, and critical analysis).”

This year, at least 94 percent of districts report technology is integrated in the four core content areas. As depicted in Figure 7, 538 districts (98 percent) report technology is integrated in communication arts, compared to 531 (96.5 percent) for science, 524 (95 percent) for mathematics, and 516 (94 percent) for social studies.

Figure 7

**Percent Districts with Technology Integrated in Curriculum
by Subject, 2003 – 2008**



In 2004, the state upgraded the definitions and/or standards related to technology integration, student technology literacy, and teacher technology integration skills in order to better align with national standards (NETS). The dip noted in 2004 of the percentages of districts reporting to have technology integrated in the core curriculum areas is a reflection of the revised definition for integration. The increases for 2005 through 2008, therefore, indicate more than just modest improvement.

Item 7– District-provided email

Districts, for item 7, indicate the percentage of employees (by type) and students (by grade-level spans) who are provided email accounts. Table 8 shows that nearly all (97 percent) districts provide email accounts to employees, but less than one-fourth of districts provide accounts to students. Note that districts that do provide staff email accounts, however, typically provide accounts for all administrators, teachers, and support staff.

Table 8

Number Districts with Email Accounts, by Account/User Type, 2003 – 2008

<u>Population</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
District Employees						
• School administrators	504	515	502	508	522	534
• Teachers	499	510	495	498	518	530
• Support services staff	477	494	472	482	503	509
Students						
• Pre K-2	31	22	13	9	10	13
• 3-5	58	51	33	31	31	36
• 6-8	81	72	51	54	57	60
• 9-12	108	125	108	111	118	132

Item 8 – Technology literacy

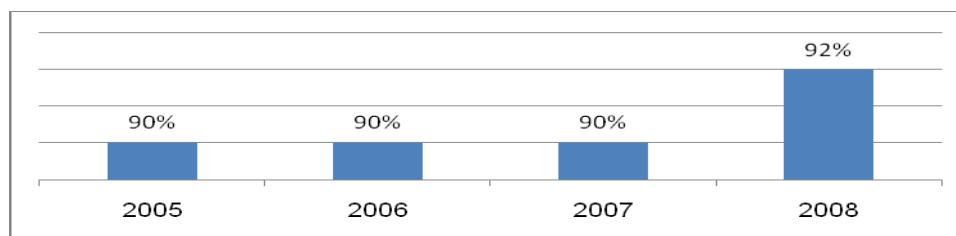
In 1997, COT began asking districts to estimate the percentage of sixth-grade students who are computer literate, a goal set forth by Governor Mel Carnahan in January of 1997. In 2004, the item was revised to address “technology literacy” rather than “basic computer skills” and revised again in 2005 to address eighth-grade students. These revisions better align the COT item with the Title II.D technology literacy goal.

The state defines student technology literacy as: “the ability to use appropriate technologies to communicate, solve problems, and access, manage, integrate, evaluate, and create information to improve learning and acquire lifelong knowledge and skills.” Aligned to the NETS for students, literate students should be able to apply strategies for identifying and solving routine hardware and software problems that occur during everyday use; exhibit legal and ethical behaviors when using information and technology; use content-specific tools, software, and simulations to support learning and research; design, develop, publish, and present products using technology resources that demonstrate and communicate curriculum concepts, and select and use appropriate tools and technology resources to accomplish a variety of tasks and solve problems.

As illustrated in Figure 9, the median district reported that 92 percent of its eighth-grade students meet the technology literacy standard. This represents a two percent increase from the 90 percent that has been consistently reported since the definition change.

Figure 9

Percent Eighth-grade Students Technology Literate, 2005 – 2008



TECHNOLOGY FUNDING

Districts are asked about their technology funding habits to study budget trends with regards to how much districts spend on technology and how districts make use of the national E-rate program.

Item 9 – Technology budgets

Prior to 2005, districts entered amounts by budget category. The item was revised in 2005, asking for the total amount budgeted for technology for the current year. The Core Data Manual directs districts to include in the total, all costs related to:

Hardware – Computers, replacement computers, scanners, networked printers, color printers, headphone and peripherals (such as video recorder/player [VCR or DVD], projection systems, fax, and copiers)

Instructional software – Applications, curricular (original and upgrade licenses), multimedia materials and supplies, etc.

Administrative software – Network operating systems, student information systems, grading, attendance, etc.

Professional development – Trainers, support materials, mileage, stipends, substitute pay, conferences, etc.

Connectivity/distance learning – Internet access fees/charges, telecom connections, distance learning, satellite, cable, I-TV, etc.

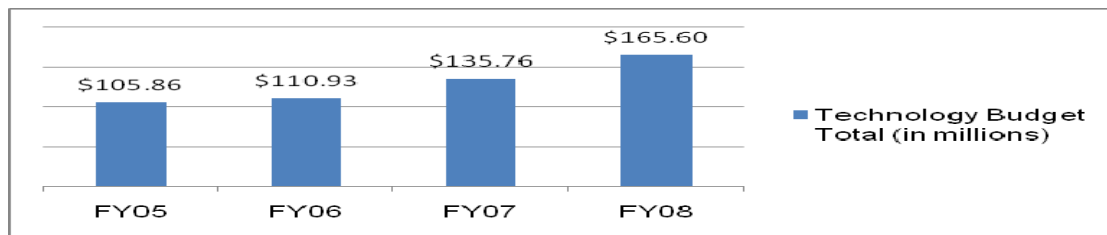
Technical support – Maintenance contracts, replacement parts, materials, training, staff, etc.

Infrastructure/retrofitting/other – Telecom infrastructure, furniture, security, special interfaces, electrical upgrades, heat/air conditioning, wiring, asbestos abatement, etc.

For FY08, districts estimated spending nearly \$165.6 million during the school year. As noted in Figure 10, the total amount represents a substantial increase. It should be noted the totals for 2007 and 2008 represent larger numbers of respondents – the 2007 total includes 16 charters and the 2008 total includes a total of 27 charter LEAs.

Figure 10

Technology Expenditures, 2005 – 2008



The current total averages about \$295,093 per district. However, the average amount is inflated by the number of larger schools with access to greater resources. The typical (median) district reported a technology budget of only \$55,000, compared to \$50,000 reported in 2006 and 2007.

Items 10 and 11 – E-rate discounts

Item 10 asked districts if they participated in the Universal Service Fund's E-rate program this school year, and the estimated amount of discounts/savings. Item 11 asked what percent of the

discount received through the E-rate program is used to support education technology activities and expenditures. Note: While MOREnet files an E-rate application on behalf of the 516 districts, charter LEAs, and state schools that participate in the statewide network project (TNP), items 10 and 11 refer to district-filed applications for E-rate discounts.

During the past year, three in four districts received E-rate funding commitment decision letters, totaling over \$26 million. The amounts ranged from under \$100 to over \$12 million, with the state averaging \$47,489 per district. The median district reported receiving \$5,904 and being able to spend 50 percent of this amount to support education technology. Table 11 compares E-rate statistics reported 2003 through 2008. Again, note that 2007 and 2008 statistics are influenced by the inclusion of the charter LEAs.

Table 11

District E-rate Participation, 2002 – 2008

	<u>02-03</u>	<u>03-04</u>	<u>04-05</u>	<u>05-06</u>	<u>06-07</u>	<u>07-08</u>
Number districts applying	374	381	414	404	399	411
Percent districts	71%	74%	79%	77%	74%	75%
Discounts received (reported in millions)	\$41.0	\$32.5	\$29.7	\$25.3	\$25.7	\$26.2

Also, it should be noted that the new “2-in-5” rule went into effect for Funding Year 2005, which restricts some district participation in the E-rate program – eligible entities are only able to receive support for Internal Connections in two of every five funding years.

B. School Building Census

This section of the *Census of Technology Report* analyzes data from 2,245 buildings, compared to 2,218 buildings in 2007, 2,229 buildings in 2006, 2,211 buildings in 2005, 2,207 buildings in 2004, and 2,250 buildings in 2003. The state summary report only covers those buildings with regular student populations. Data from juvenile centers, special education cooperatives, and other buildings (such as a gifted center) where attendance is reported at another building are not included in this report.

The school census is comprised of 18 items that are aligned to the Missouri State Education Technology Strategic Plan (METSP) and its five technology focus areas. Items examine access and distribution of the building’s technology resources, technical support, teacher and student technical skills, and the routine uses of technology by user and technology type or function. A copy of the survey with aggregated data is provided as an Appendix.

Overall, current data indicate continued improvements in the kinds and numbers of technologies that can be accessed in Missouri’s school attendance centers, as well as in the ways school administrators, teachers, and students are using those technology resources. A good number of the gains are modest, at best, and likely a result of the tight budget year as explained earlier in this report. Some of the differences (or the magnitude of differences) noted in data from 2003 to 2008 can likely be attributed to the setting of higher standards (i.e., the changes in definitions for technology literacy and full integration) as described earlier, and to the change in reporting only buildings with regular student attendance. This is not to say there are not areas that show more noteworthy increases.

TECHNOLOGY PLANNING

As with the district COT, the building census examines the presence of a long-range technology plan. A school building plan, like a district plan, should provide a road map to help the school implement strategies that promote the district's mission, advance district and building improvement plans, and improve the teaching and learning occurring in the building.

Planning Item 1 – Building technology plans

Building contacts are asked if buildings have technology plans and, if so, whether they are stand-alone plans and/or are embedded in district plans. Table 12 indicates the percentage of school buildings that have technology plans, the percentage of building plans that serve as stand-alone plans, and the percentage of plans that are included in district plans. Data show a continued trend in buildings having technology plans, starting with only 69 percent of buildings having plans in 2000 to 99 percent having plans since 2006.

Table 12

Status of Building Technology Plans, 2000 – 2008

<u>Percent Buildings</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
Building Plan	83%	83%	83%	95%	97%	98%	99%	99%	99%
Covered in District Plan	96%	96%	96%	88%	89%	92%	91%	91%	92%
Stand-alone Plan	NA	NA	NA	6%	7%	6%	7%	8%	7%

TECHNOLOGY PROFESSIONAL DEVELOPMENT

The use of technology in the school setting requires professional development aimed at helping educators integrate the appropriate education technologies into curriculum content, instructional teaching strategies, and the day-to-day business of teaching and learning. Teachers, principals and other building administrators, and school services staff need regular, ongoing, and quality professional development that helps them gain the confidence and skills needed in using the school's technologies in ways that promote district and school improvement plans and align with Show-Me Standards, board-approved curriculum, and board-approved educational technology standards.

Training Item 1 – Technology skills of building staffs

Building contacts are asked to estimate the technology-related skill levels of principals/administrators, teachers, and support services staff. The skill level options are:

Beginner – basic technical skills including applications such as word-processing, some stand-alone software, and some Internet usage (email)

Intermediate – regular use of applications, software, and Internet resources for increased productivity and the use of applications including word-processor for student writing, research on the Internet, computer-generated presentations

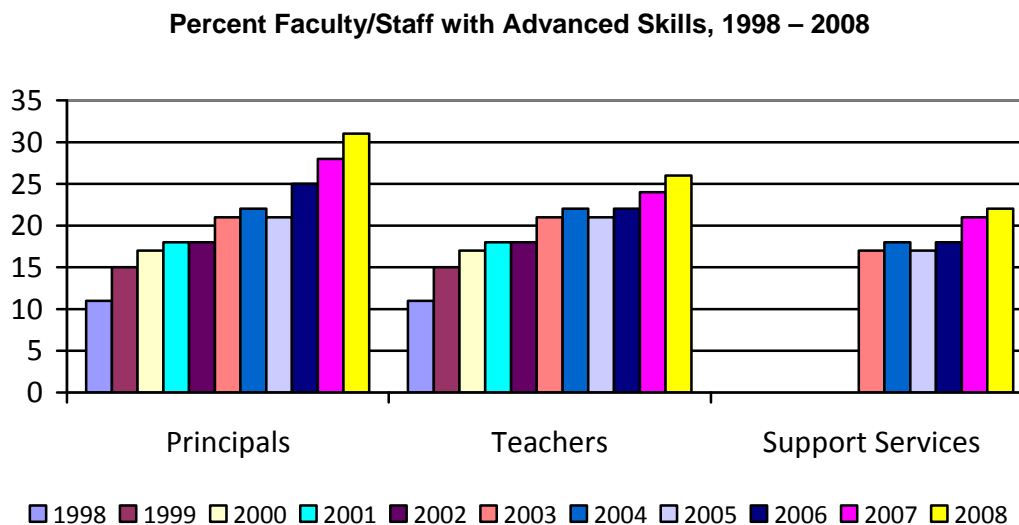
Advanced – complete integration and mastery of the technology, using it effortlessly as a tool to accomplish a variety of learning, instructional, and/or management tools

Since 1998, the percentages of staffs with beginner skills have decreased steadily while the percentages with advanced skills have increased.

The proportion of teachers estimated as beginner technology users has decreased from 40 percent reported in 1999 to 14 percent in 2008. The rate of administrators (e.g., principals) estimated as having beginner skills has decreased from 35 percent in 1999 to five percent in 2008.

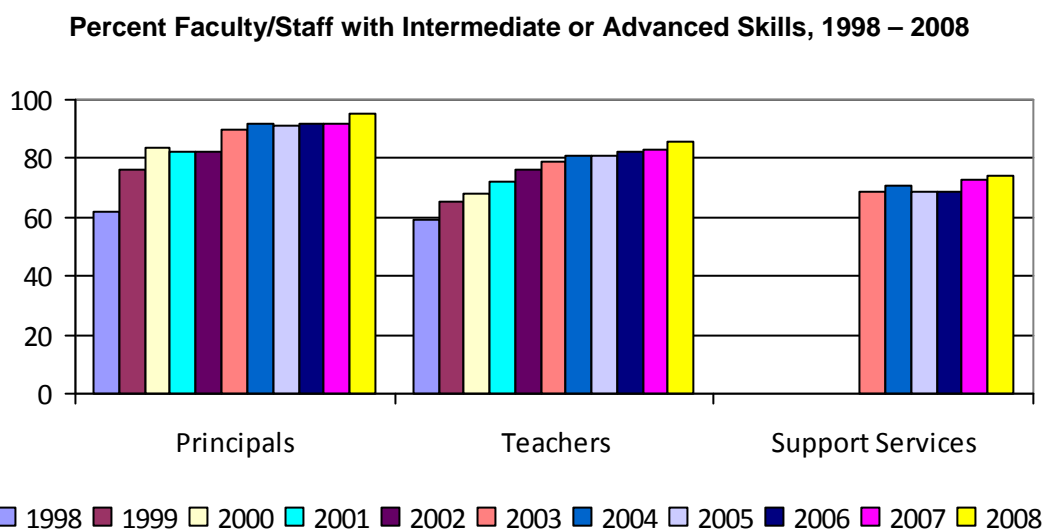
Figure 13 illustrates the percentages of teachers, building administrators, and support services staff as having advanced technology skills from 1998 to the present. (Note that the support services staff category was not included until 2003.) The rates of teachers reported as advanced users have more than doubled, from 11 to 26 percent. The group with the highest rate of advanced skills is administrators at 31 percent.

Figure 13



To meet the state's definition of technology literacy for educators, they must possess intermediate skills or higher. Figure 14, which combines intermediate and advanced skills, indicates this standard was met by 95 percent of administrators, 86 percent of teachers, and 74 percent of support services staff. (Note again that the support services staff category was not included until 2003.)

Figure 14



Training Item 2 – Number of teachers participating in education technology related professional development (including eMINTS)

Added in 2006, this item asks schools to report the number of teachers receiving education technology-related professional development by the number of hours completed. Table 15 presents data compiled for 2006 to the present. The table indicates that while there was an

overall increase in the number of teachers in technology-related professional development from 2006 to 2007, there were fewer numbers of teachers in the upper brackets (completing 15 to 30 and more than 30 hours). The counts increased for all professional development categories from 2007 to 2008, with over 7,000 more educators reported as receiving training in 2008 than in 2007.

Table 15

**Number of Teachers In School Building Participating In Education
Technology Professional Development (including eMINTS), 2006 – 2008**

	<u>2006</u>		<u>2007</u>		<u>2008</u>	
	<u>Teachers</u>	<u>Buildings</u>	<u>Teachers</u>	<u>Buildings</u>	<u>Teachers</u>	<u>Buildings</u>
Completed 1 to 15 hours	35,652	1,717	40,348	1,894	45,577	2,003
Completed 15 to 30 hours	8,557	870	6,492	823	7,741	894
Completed > 30 hours	<u>3,368</u>	622	<u>3,095</u>	602	<u>3,916</u>	705
Total	47,577		49,935		57,234	

Training Item 3 – Number of eMINTS-trained teachers

Added in 2004, this item asks schools to report the number of teachers in the building who have completed one or both years of eMINTS professional development. The *enhancing* Missouri's Instructional Networked Teaching Strategies (eMINTS) program – that serves as the state's instructional model of technology integration – supports teachers as they learn to integrate multimedia technology into inquiry-based, student-centered, interdisciplinary collaborative teaching practices that result in improved student performance, increased parent involvement, and enriched instructional effectiveness.

The item was revised in 2006 to provide specificity about the numbers of teachers being trained in flagship eMINTS professional development programs: the Comprehensive eMINTS and the eMINTS4All programs for teachers and PD4ETS, the train-the-trainer professional development program for education technology specialists.

Comprehensive eMINTS – The eMINTS Comprehensive Professional Development for Teachers program is provided to official eMINTS teachers who have the full suite of required hardware and software. This two-year program is comprised of more than 250 contact hours delivered face-to-face and online by eMINTS staff members and by certified eMINTS Instructional Specialists who have successfully completed the Professional Development for Education Technology Specialists (PD4ETS) program.

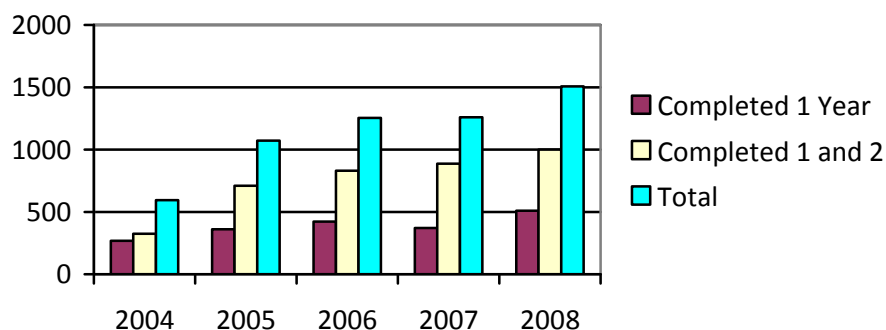
eMINTS4All – This two-year program, 90-contact hour program that provides a subset of the Comprehensive eMINTS professional development and requires less classroom technology. The eMINTS4All program is designed to help teachers in the grades prior to the eMINTS classrooms to have a full understanding of the cognitive, social and technological skills that students will need to be successful in eMINTS, and to help teachers in other subject areas or in the grades following the official eMINTS classrooms to have a full understanding of the cognitive, social and technological skills of their eMINTS-experienced students.

eMINTS Professional Development for Education Technology Specialists (PD4ETS) – This is a two-year “train-the-trainer” program designed to prepare educators with the vision and skills necessary to lead their own schools or districts in the successful use of educational technology, based on the eMINTS instructional model. PD4ETS includes a rigorous certification process with significant levels of support from eMINTS staff both on-site and off. Successful completion of the certification process allows participants to deliver eMINTS comprehensive and eMINTS4All professional development to school or district educators for an annual access fee.

Figure 16 indicates the numbers of reported for the original, Comprehensive eMINTS for teachers program, from 2004 to the present. In the first year, building contacts reported having a total of 594 educators with one or both years completed of their eMINTS professional development programs. This number increased to 1,071 in 2005, 1,254 teachers in 2006, 1,258 in 2007, and 1,508 in 2008. While the majority of eMINTS-trained teachers received their professional development from eMINTS instructional staff, more and more teachers are receiving their professional development through district staff that has completed the eMINTS program's "train-the-trainer" professional development.

Figure 16

Number of Comprehensive eMINTS Teachers by Number of Years of Training, 2004 – 2008



Beginning in 2006, districts were also asked to report the number of individuals being trained in other two-year eMINTS professional development programs, such as eMINTS4All and the eMINTS4ETS programs. Table 17 reports these numbers. Although the numbers continue to climb, a comparison of the percentage of teachers trained and the total number of teachers continues to show a wide gap.

Table 17

Number of eMINTS-Trained Teachers by Number of Years of Training and Professional Development Type, 2006 – 2008

Professional development Type:	Number Participating Teachers								
	Year 1 only			Both Year 1 and 2			Total		
	2006	2007	2008	2006	2007	2008	2006	2007	2008
Comprehensive eMINTS	423	372	509	831	886	999	1,254	1,258	1,508
eMINTS4All	179	204	164	74	196	335	253	400	519
Ed-Tech Specialists	71	21	51	82	87	103	153	108	154

HARDWARE AND SUPPORT

Hardware and support items deal with technology access and support issues at the building level. These cover items such as the kinds and level of technical support, the numbers of computers by type and location (and student per computer ratios), and the kinds of technologies available in classrooms and other instructional rooms.

Hardware Item 1 – Building technical support

Building contacts were asked to detail the people (staff employed by the district) or others (non-employees) who were directly responsible for technical maintenance and/or support of the

building's hardware. Table 18 indicates the kinds of staff and others most likely to perform these duties, from 2006 to present.

Table 18

Building Technical Support, by Support Provider, 2006 – 2008

<u>Employee Type</u>	<u>Buildings</u>			<u>Non-Employee Type</u>	<u>Buildings</u>		
	<u>2006</u>	<u>2007</u>	<u>2008</u>		<u>2006</u>	<u>2007</u>	<u>2008</u>
District technology staff	80%	82%	81%	Vendors/contractors	27%	30%	25%
School certificated staff	31%	28%	24%	Students	9%	8%	7%
School non-cert. staff	27%	22%	20%	Parents/community	1%	1%	<1%
None	5%	6%	6%	None	66%	63%	69%
Average (FTE)	1.2	1.1	1.09	Average (Hours)	73	117	42

In general, buildings engage employees rather than non-employees to provide technical support. This year, 94 percent of all buildings reported having employees responsible for technical maintenance and support, the same percent found in 2007 and compared to 95 percent in 2006. For all years, this role was filled predominantly by district technology staff. The number of staff varied widely across the buildings, with the median building reporting 1.09 FTE, down from 2007 and 2006. Just over 30 percent of buildings had contractors, vendors, or others perform technical maintenance and/or support. The average number of hours reported in 2008 was 42, also down from 2007 and 2006. Between 2006 and 2007, the number of contract hours increased, while the number of FTE decreased. In 2008, decreases were found for both the average FTE and the average number of hours worked by others.

Hardware items 2 and 3 – Computers in the building

Annually, buildings complete tables to indicate computers by type and location. Hardware and Support item 2 counts computers by platform and speed capacity and item 3 counts multimedia-equipped and Internet-connected computers. Locations include computer labs (rooms specifically designated for computer work); classrooms; library media centers; and administrative offices (such as a principal or guidance counselor office). In 2005, the classroom location was divided into grade spans of PreK-2, 3-5, 6-8, 9-12, and area career centers.

Table 19 summarizes the numbers of computers reported this year. Sub-totals and totals are provided related to the different locations and computer types. Where applicable, percentages are also reported, as well as ratios – the numbers of students per computer type and location.

Computer Location: Headings include Classroom Details (highlighted in light green) for computers located across the grade spans and area career centers; Instructional Room Details (highlighted in light turquoise) for computers located in all classrooms plus computer labs and libraries; and, Total Computers (highlighted in pale blue) that makes a distinction between instructional and administrative uses of computers.

Computer Type: Headings include Apple/Mac computers, PCs and PC-compatible computers, total computers, handheld devices (reported since 2005), and all machines. Sub-headings detail modern, multimedia, and Internet-connected devices. Within the Mac and PC categories, the succeeding rows indicate newer models – the rows highlighted in gray represent older models and rows not highlighted indicate modern computers. [Modern computers include: Mac G3 and G4, Pentium III or higher, and AMD with 450 or greater Mhz.]

Table 19

Number, Type, and Location of Computers, and Related Statistics* – 2008

Computers by Type and Location	Classroom Details					Instructional Room Details			Total Computers		
	PreK-2	3-5	6-8	9-12	Career Centers	Class Rooms (CL total)	Computer Labs	Library Centers	Instruct. (IR total)	Admin.	TOTAL
Apple/Mac											
LC series	355	307	90	333	40	1,125	823	56	2,004	57	2,061
Power Macs	490	298	135	300	37	1,260	292	62	1,614	19	1,633
G3	2,636	2,611	2,053	1,166	197	8,663	3,265	650	12,578	234	12,812
G4, later	3,039	4,670	4,604	3,807	502	16,622	10,771	1,674	29,067	925	29,992
Mac Total	6,520	7,886	6,882	5,606	776	27,670	15,151	2,442	45,263	1,235	46,498
(% Modern)	(87%)	(92%)	(97%)	(89%)	(90%)	(91%)	(93%)	(95%)	(92%)	(94%)	(92%)
PC/PC-Compatible											
486, earlier	109	63	59	141	17	389	40	71	500	30	530
Pentium I-II	1,607	1,654	871	2,098	189	6,419	1,449	709	8,577	456	9,033
Celeron	3,574	5,540	3,673	5,332	409	18,528	8,381	1,890	28,799	1,858	30,657
AMD <450 MHz	1,448	2,274	1,902	2,565	367	8,556	5,034	1,273	14,863	1,237	16,100
Pentium III	3,817	4,870	4,192	5,417	826	19,122	7,251	2,261	28,634	1,459	30,093
Pentium IV+	17,685	27,207	22,905	37,213	6,730	111,740	66,600	16,533	194,873	17,002	211,875
AMD >450 MHz	240	319	249	348	24	1,180	529	228	1,937	116	2,053
PC Total	28,480	41,927	33,851	53,114	8,562	165,934	89,284	22,965	278,183	22,158	300,341
(% Modern)	(76%)	(77%)	(81%)	(81%)	(89%)	(80%)	(83%)	(83%)	(81%)	(84%)	(81%)
Total Computers	35,000	49,813	40,733	58,720	9,338	193,604	104,435	25,407	323,446	23,393	346,839
Ratio	5.82	4.05	5.00	4.86	NA	4.62	8.57	NA	2.77	NA	2.58
Multimedia	33,230	47,766	38,456	54,687	7,649	181,788	100,801	24,487	307,076	22,970	330,046
(% Multimedia)	(95%)	(96%)	(94%)	(93%)	(82%)	(94%)	(97%)	(96%)	(95%)	(98%)	(95%)
Ratio	6.13	4.23	5.29	5.22	NA	4.92	8.87	NA	2.91	NA	2.71
Handheld Devices	1,336	5,199	3,304	2,130	183	12,152	1,274	771	14,197	1,602	15,700
ALL MACHINES	36,336	55,012	44,037	60,850	9,521	205,756	105,709	26,178	337,643	24,995	362,638
Ratio	5.61	3.67	4.62	4.69	NA	4.35	8.46	NA	2.65	NA	2.47
Connected	33,856	49,750	40,439	59,191	8,314	191,550	105,709	25,829	323,097	24,306	347,403
(% Connected)	(93%)	(90%)	(92%)	(97%)	(87%)	(93%)	(100%)	(99%)	(96%)	(97%)	(96%)
Ratio	6.02	4.06	5.03	4.82	NA	4.67	8.46	NA	2.77	NA	2.57

* Ratios are based on the 2007-08 K-12 student population of 894,497
[203,703 in K-2; 201,880 in 3-5; 203,472 in 6-8; and, 285,442 in 9-12]

This year, building contacts reported a total of 362,638 computers: 346,839 desktop and laptop computers and 15,700 handheld computing devices. About 96 percent of all the computers are connected to the Internet. Of the desk and laptops, 95 percent are multimedia-equipped, 88 percent are PCs or PC-compatible machines, and 81 percent are considered modern.

Table 20 compares key computer statistics from 2005 (when handhelds and grade spans were added) to the present. Each year indicates a modest increase in the total number of computing devices, ranging from just under 5 percent between 2006 and 2007 to almost 10 percent between 2005 and 2006.

Table 20

Number, Type, and Location of Computers, 2005 – 2008

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
Total number of computers (all devices)	299,113	328,058	343,306	362,638
<i>Percent change from previous year</i>		+9.7%	+4.6%	+5.6%
• Percent desktop/laptop computers	97%	96%	96%	96%
○ Percent PC-compatible computers	85%	85%	86%	87%
○ Percent multimedia devices	86%	92%	95%	95%
• Percent handheld devices	3%	4%	4%	7%
• Percent Internet-connected devices	91%	92%	95%	96%
• Percent instructional devices	93%	93%	93%	93%
○ Percent located in classrooms	56%	55%	56%	57%
▪ Grades PreK-2	18%	18%	17%	18%
▪ Grades 3-5	26%	26%	27%	27%
▪ Grades 6-8	21%	21%	22%	21%
▪ Grades 9-12	30%	30%	29%	30%
▪ Area career centers	4%	4%	4%	5%
○ Percent located in computer labs	29%	30%	30%	29%
○ Percent located in library centers	7%	7%	8%	7%

Other statistics of note include the continued high percentages of computing devices that are multimedia-equipped (from 86 to 95 percent) and Internet-connected (from 91 to 96 percent). The rates of PC-compatible machines and the distribution of computing devices across classrooms and other instructional rooms have remained fairly constant the last three years. The range of computers located in a lab setting remains steady at or near the 30 percent range, after a high of 36 percent in 1998. The percentage of computers residing in classrooms increased from 47 percent in 1999, to 56 percent in 2004, where it has remained fairly steady. The shift is more noticeable when looking at the placement rates of computers within the instructional settings. This year, only 31 percent of “instructional” computers were located in labs as compared to 41 percent in 1999. The percent of “instructional” computers in classrooms has grown from 52 percent in 1999 to 61 percent this year. While the number of handheld devices has increased each year, handhelds only account for three to four percent of the total.

Table 21 details the Internet-connectivity (wired or wireless) by computer type and location. As in previous years, and as one might expect, desktops predominantly had wired Internet connections and laptops had wireless connections.

Table 21

Number, Type, and Location of Computers, 2005 – 2008

<u>Connection Type</u>	<u>Classrooms</u>								<u>Total</u>
	<u>Labs</u>	<u>PreK-2</u>	<u>3-5</u>	<u>6-8</u>	<u>9-12</u>	<u>ACC</u>	<u>LMCs</u>	<u>Admin.</u>	
Total Connected	105,709	33,856	49,750	40,439	59,191	8,314	25,829	24,306	347,403
Wired									
Desktops	84,295	29,620	40,809	32,436	47,010	7,213	21,951	19,830	283,164
Laptops	1,110	1,075	1,943	1,446	1,977	283	634	1,870	10,338
Handhelds	58	415	526	376	171	7	11	205	1,769
Wireless									
Desktops	2,012	281	1,074	396	983	153	333	142	5,374
Laptops	18,118	2,382	5,191	5,344	7,916	610	2,788	1,595	43,944
Handhelds	125	83	207	441	1,134	48	112	664	2,814

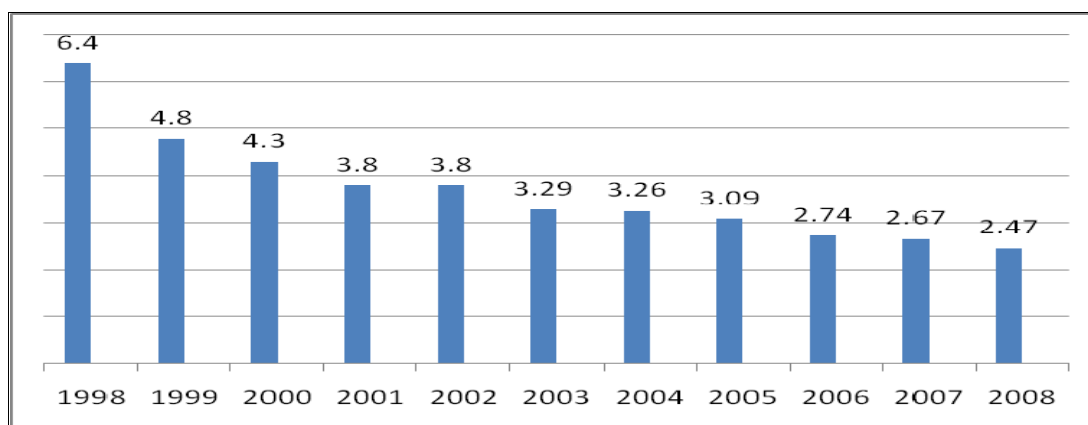
Students to Computer Ratios

Ratios are determined using the COT data (numbers and types of computers) and Core Data fall enrollment figures. As schools purchase new computers, older computers may be relocated within or surplus out of the district. The number of computers in use continues to climb, resulting in a steady decline in the number of students per computer. Ratios are declining related to both the number of students per high-speed (modern or Internet-capable) computer and Internet-connected computer. The greatest decline involves Internet-connected computers, as more and more buildings, classrooms, and computers are connected to district networks.

Figure 22 indicates the number of students per computer (all devices located across all buildings), since 1998. As noted, the ratio has declined steadily, from 6.4 students per computer in 1998 to under 2.5 students in 2008.

Figure 22

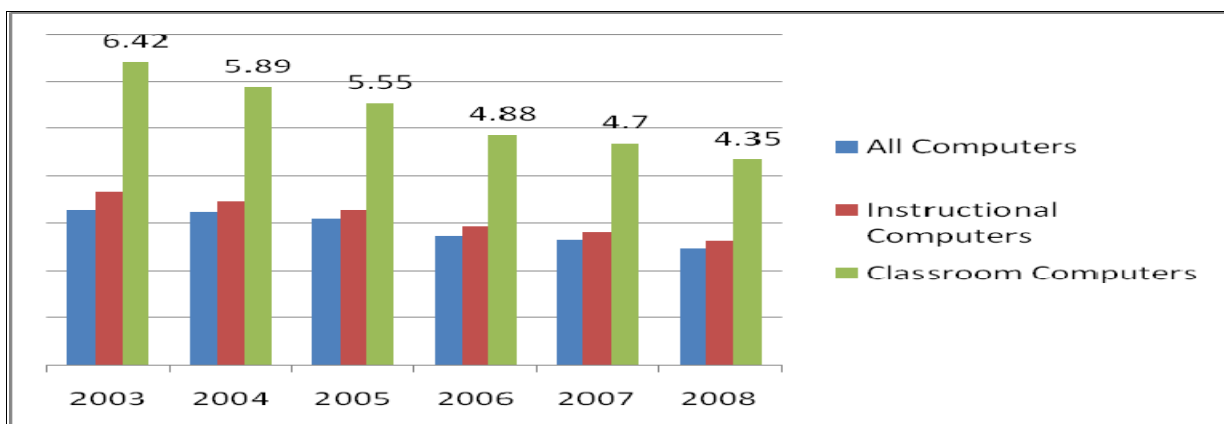
Number of Students per Computer, 1998 – 2008



Higher ratios are noted when examining the number of students based on computers located in all instructional rooms and computers located only in classrooms. Figure 23 compares the three ratios: all computers, instructional computers, and classroom computers, from 2003 to the present. The number of students per instructional computer has declined from 3.66 in 2003 to 2.77 this year. The number of students per classroom computer has also declined, from 6.42 in 2003 to 4.35 this year; however, this is nearly double the number of students per all computers.

Figure 23

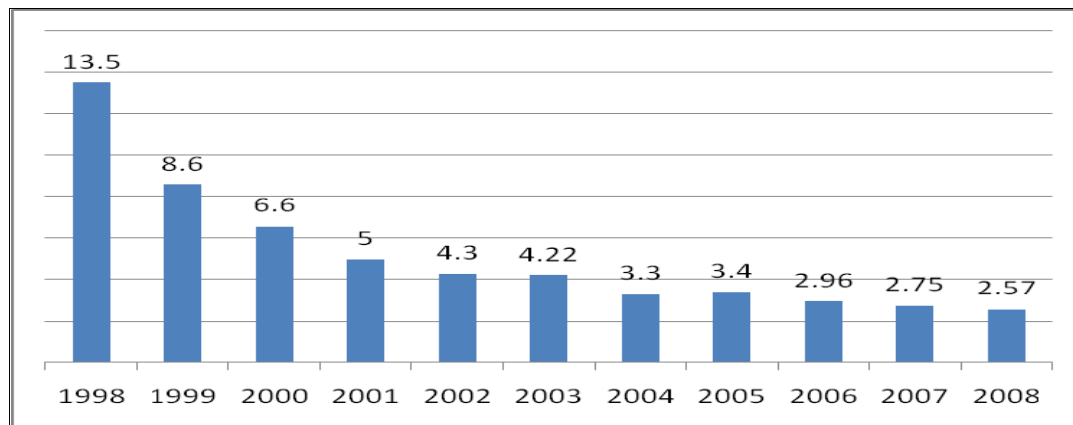
Number of Students per Computer by Location, 2003 – 2008



The number of students per Internet-connected computer has also dropped consistently. Figure 24 charts Internet-connection ratios from 1998 to the present. In 2008, there were 2.57 students per Internet-connected computer, compared to 13.5 students in 1998.

Figure 24

Number of Students per Internet-Connected Computer, 1998 – 2008



Hardware item 4 – Technology in instructional rooms

For this item, buildings report on a list of technologies the state believes should be available in instructional rooms based on current research and the eMINTS instructional model. As described earlier, eMINTS educators integrate technology into inquiry-based, student-centered, interdisciplinary, and collaborative teaching practices that result in improved student performance. Critical classroom resources include telephone access, multimedia-equipped and Internet-connected computers, and a teacher workstation that includes a dedicated projection device (LCD panel or other type of video projector), and access to a printer.

Table 25 summarizes the data collected in 2008. Over 90 percent of all rooms are equipped with at least one multimedia-equipped computer that is connected to the Internet. However, only two in three rooms have telephone access, and one in three has a full suite of classroom technology. The increasing use of cell phones might explain the lower telephone-access rates.

Table 25

Room Technology Status – 2008

	<u>Labs</u>	<u>Classrooms</u>				<u>ACC</u>	<u>LMCs</u>	<u>Admin</u>	<u>Total</u>
	<u>PreK-2</u>	<u>3-5</u>	<u>6-8</u>	<u>9-12</u>					
<u>Total Rooms</u>	4,169	14,083	13,318	14,604	18,590	1,887	2,287	68,938	13,148
Percent rooms with:									
• Telephone access	67%	62%	63%	64%	66%	70%	88%	65%	95%
• Internet access (wired or wireless)	98%	98%	99%	98%	98%	94%	97%	98%	98%
• ≥1 multimedia computer	96%	95%	81%	92%	94%	88%	93%	94%	92%
• ≥1 Internet-connected computer	92%	94%	95%	92%	92%	83%	91%	93%	90%
• Internet-connected multimedia computer, projection device, and printer access	70%	42%	54%	45%	44%	33%	53%	47%	17%

Table 26 compares the technology status in instructional rooms from 2006 to the present. Overall, computer labs, libraries, and classrooms have about the same access to computer technologies in terms of having at least one multimedia and Internet-connected computer. Although computer labs and classrooms have seen a marked increase, libraries continue to have greater access to telephones. While still far behind the other categories, the most dramatic increases have been seen in the final category that includes a projection device and access to a printer.

Table 26

Computer Lab, Classroom, and Library Technologies, 2006 – 2008

	<u>Labs</u>			<u>Classrooms</u>			<u>Libraries</u>		
	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
<u>Total Rooms</u>	4,305	4,566	4,169	56,558	61,104	62,482	2,164	2,306	2,287
Percent rooms with:									
• Telephone access	58%	63%	67%	60%	62%	64%	84%	86%	88%
• Internet access	98%	95%	98%	98%	98%	98%	98%	96%	97%
• Multimedia computer	95%	93%	96%	93%	94%	94%	93%	93%	93%
• Internet-connected computer	93%	91%	92%	92%	93%	93%	91%	90%	91%
• Complete teacher workstation	59%	63%	70%	29%	37%	45%	44%	48%	53%

Hardware items 5 and 6 – Technical maintenance and repair

First addressed in 2003, item five asks for the length of time needed for technical problems or repairs to be resolved. As noted in Table 27, buildings have seen a marked decrease in the amount of time needed for typical problems or repairs. By 2008, almost 90 percent of buildings report a turn-around time of three or fewer working days.

Table 27

**Percent Buildings Resolving Typical Technical Issues
in Three Working Days or Sooner, 2006 – 2008**

<u>Percent Buildings</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
1 Day	5%	32%	36%	42%	45%
2 to 3 Days	51%	49%	45%	46%	43%

INTERNET CONNECTIVITY / DISTANCE LEARNING

This section deals with building networking, Internet, and interconnectivity issues. Items address the systems in place that facilitate quality, secure, and safe access to people and information, both in and outside the school building.

Connectivity item 1 – Internet bandwidth

The first Internet connectivity item asks buildings to indicate the type (size) of Internet connectivity and the delivery mode. While COT has collected Internet-related data since the first year, delivery mode data has only been collected since 2005. Following are definitions and an example of how to respond to the item:

Bandwidth – The speed of the telecommunications link between a computer and a local area network and/or an Internet service provider. [If two or more buildings share a T1 line, report each building as having access to 1.5mb.]

Delivery mode – The method used to link computers, network, and Internet service (e.g., fiber, copper wire, DSL, etc.).

Table 28 summarizes the status, kinds and means of building connectivity for the current year, while Table 29 provides select trend, from 2005 to the present. As shown in Table 28, all but four of 2,248 buildings reported having direct connections to the Internet, with 23 buildings reporting connections under 385kb, and 2,067 buildings (92 percent) having a T1 or better connectivity. The most prevalent means of delivering bandwidth are fiber lines (at 61 percent) and copper lines (at 31 percent).

Table 28

Internet Access – 2008

<u>Bandwidth</u>	<u>Buildings</u>	<u>Percent</u>	<u>Delivery Mode</u>	<u>Buildings</u>	<u>Percent</u>
56kb – 384 kb	23	1%	Copper line	689	31%
385kb – 1.4mb	154	7%	Fiber	1,373	61%
1.5mb (T1) – 9.9mb	1,171	52%	DSL	89	4%
10mb – 45mb	449	20%	Satellite	8	<1%
45mb – 100mb	258	11%	Other: <u>42 Wireless</u>	46	2%
>100mb	189	8%	None/Unknown	38	2%
None	1	<1%			
Unknown	3	<1%			

As shown in Table 29, the percent of buildings reporting direct Internet connectivity has remained steady at 99 percent. However, the percent of buildings with T1 or greater connectivity has grown substantially, from 79 percent in 2005 to 92 percent in 2008. And the percent having fiber connections has grown from 46 percent in 2005 to 61 percent in 2008. Note that, in 2008, the MOREnet Technology Network Program (TNP) served 518 K-12 institutions: 514 districts, two charter LEAs, and the state schools for the blind and deaf. TNP works with members to make sure they are receiving enough bandwidth to meet user needs.

Table 29

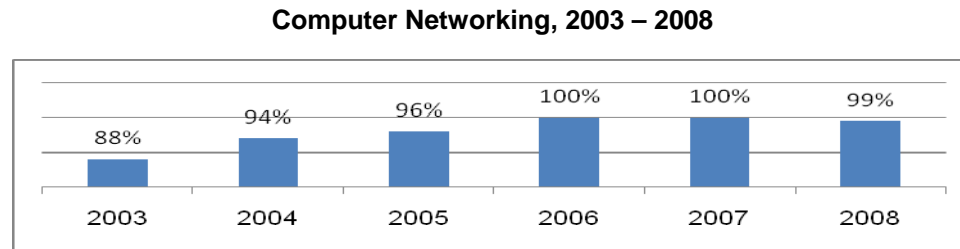
Internet Access, 2002 – 2008

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
<u>Total number buildings</u>	2,211	2,229	2,218	2,248
BANDWIDTH				
• Percent with Internet access	99%	99%	99%	99%
• Percent with T1 or better	79%	83%	85%	92%
DELIVERY MODE				
• Percent Fiber	46%	50%	57%	61%
• Percent Copper	38%	35%	30%	31%

Connectivity item 2 – Computer networking

Originally, this item had two parts – percentage of computers in the building connected through a local or wide area network and whether the building was connected to the district LAN or WAN. The item was revised in 2005 to deal only with computer networking, with the part about building connectivity moved to the District Census. Figure 30 reports on the percent of computers connected to a building (or district) network, from 2003 to the present. As indicated in the table, the proportion of a building's computers connected to a LAN or WAN has grown steadily, from 88 percent in 2003 to 99 percent or higher since 2006.

Figure 30



Connectivity item 3 – Distance learning systems

This long-standing item addresses accessibility to instructional programming that is originated from outside the building. The item was updated in 2005 to further define and distinguish among five options:

Interactive television (I-TV) – Students receive instruction (usually in classroom setting) from a remote live teacher via two-way interactive (audio and video) instruction.

Desktop video conferencing – Students at computers receive two-way audio and video instruction from a remote live teacher.

Web-based online instruction via Internet – Students at computers receive packaged instruction without live audio and video interaction.

Satellite Programming – One-way instructional video signal received through satellite downlink dish.

Cable Television – One-way instructional video received through commercial or public television station(s).

Table 31 compares distance learning data from 2005 to the present. As listed in the table, the number of buildings reporting to have one or more distance learning systems in place has grown from 75 percent in 2005 to 81 percent in 2008. For all years reported, the most commonly used system is cable television, in place in over half of the buildings. Use of interactive television has remained fairly steady at or near 20 percent, while satellite programming has dropped slightly, from 18 to 14 percent. Use of online-based instruction shows mixed results. Two-way desktop videoconferencing has increased slightly, from 12 to 15 percent. However, non-interactive online instruction increased from 32 percent to 43 percent between 2005 and in 2007, but then dropped to six percent in 2008. Note that the state's new Virtual Instruction Program (MoVIP), which makes use of online instruction, went into effect in 2007-08.

Table 31

Number and Percent of Buildings with Distance Learning Systems by System Type, 2005 – 2008

<u>Distance Learning System</u>	<u>2005</u>		<u>2006</u>		<u>2007</u>		<u>2008</u>	
	#	%	#	%	#	%	#	%
Cable television (one-way video)	1,140	51%	1,191	53%	1175	53%	1,127	50%
Satellite programming (one-way)	399	18%	405	18%	351	16%	304	14%
Interactive television	485	22%	434	19%	419	19%	426	19%
Desktop videoconferencing	270	12%	265	12%	307	14%	342	15%
Noninteractive online instruction	703	32%	807	36%	945	43%	144	6%
None	551	25%	510	23%	483	22%	435	19%

TECHNOLOGY USAGE

The remaining building items address how building faculty, staff, and students make use of available education technologies. Emphasis is placed on “routine” use, described as being used or implemented at least three times per week. As explained earlier, the Missouri School Improvement Program (MSIP) includes a standard pertaining to access and use of “Instructional Resources” that includes technology-based resources, and the scoring guide used for state approval of district technology plans also places emphasis on usage data. Both of these accountability measures factor in the following analyses.

Usage item 1 – Routine use of technology, by technology type

This item has typically asked how principals, teachers, and students use educational software, the Internet, and electronic resources. Table 32 provides trend data, from 2006 to the present. Note that the item helps track the impact of state and federal funding that promotes the use of educational technologies. The resources listed below are made available – with funding from the Secretary of State and Missouri State Library – to districts via their participation in the state-supported MOREnet Technology Network Program (TNP).

EBSCOhost – EBSCOhost Electronic Journals Service (EJS) is a gateway to thousands of journals containing millions of articles from hundreds of different publishers.

Newsbank – Newsbank is a comprehensive electronic database resource containing information from newspapers.

As shown in the table, building contacts report slight increases in school administrators, teachers and students routinely using the electronic resources. However, while all statistics have increased since 2006, the increases are modest at best and disappointing. The data indicate that MOREnet and the Department should continue to advertise these resources. Staff have found, when interacting with teachers at conferences and workshops, that many teachers are unaware that the resources exist and are available free of charge. It should also be noted that not all populations would be expected to make regular use of all the resources.

Table 32

Electronic Resource Usage Statistics by User Type, 2006 – 2008

Resource	<u>Principals</u>			<u>Teachers</u>			<u>Students</u>		
	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
Educational software	44%	47%	49%	76%	79%	80%	79%	80%	80%
Email	97%	98%	98%	94%	96%	97%	11%	13%	14%
EBSCOhost	16%	17%	16%	23%	24%	25%	22%	23%	23%
Electronic encyclopedia	14%	16%	17%	30%	32%	34%	34%	36%	36%
Newsbank	5%	8%	9%	7%	12%	14%	7%	11%	12%

Usage item 2 – Routine technology use, by function

This item asks building contacts to estimate the percentages of building administrators (e.g., principals), teachers, and students who routinely use computers and computer technologies for specific functions. Tables 33 through 35 illustrate such technology usage, from 2000 to the present: Table 33 presents data for principals, Table 34 reports teacher data, and Table 35 summarizes student data.

Table 33**Routine Use of Technology by Building Principals, 2000 – 2008**

<u>Technology Function</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
Produce media/presentation products	29%	31%	43%	46%	50%	54%	57%	61%	66%
Produce written products	68%	56%	67%	73%	77%	79%	80%	82%	84%
Conduct online research	62%	58%	69%	79%	80%	78%	81%	82%	84%
Communicate with peers, experts, others	58%	48%	63%	79%	87%	93%	95%	95%	96%
Communicate with parents and students	NA	NA	NA	NA	NA	81%	83%	86%	88%
Manage student records	66%	60%	71%	81%	83%	82%	85%	87%	89%
Track student performance	54%	56%	67%	78%	81%	80%	84%	85%	88%
Assess student performance	NA	NA	58%	67%	72%	71%	74%	76%	78%
Deliver/present instruction	18%	21%	28%	37%	39%	37%	37%	41%	44%
Enroll in online coursework	NA	NA	NA	4%	7%	11%	11%	12%	14%

Over the years, the areas where principals show the greatest increases in technology usage include: use of technology to track student performance, manage student records, conduct research, assess student performance, and produce media, web, or multimedia products or presentations for demonstration purposes. The most dramatic increases include using technology to: communicate with peers and experts (58 to 96 percent), produce media presentations (from 29 to 66 percent), track student performance (from 54 to 88 percent), and participate in online coursework, which more than tripled (from four to 14 percent).

Table 34, addressing teacher use data, indicates similar increases. By 2007, at least 90 percent of teachers use email to communicate with peers, experts, or others. By 2008, over 85 percent use technology to manage student records and track student performance. The areas showing the most increases since 2000, include: using technology to communicate with peers and experts (from 50 to 93 percent), manage student records (from 45 to 86 percent), produce media products (from 24 to 64 percent), email parents and students (from 46 to 81 percent), track student performance (from 52 to 86 percent), and participate in online coursework, which more than tripled (from five to 17 percent).

Table 34**Routine Use of Technology by Teachers, 2000 – 2008**

<u>Technology Function</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
Produce media/presentation products	24%	29%	37%	43%	47%	48%	51%	59%	64%
Produce written products	66%	60%	71%	77%	81%	79%	80%	82%	84%
Conduct online research	59%	56%	67%	74%	75%	75%	76%	77%	81%
Communicate with peers, experts, others	NA	NA	NA	50%	68%	85%	88%	90%	93%
Communicate with parents and students	46%	39%	53%	62%	66%	72%	74%	78%	81%
Prepare lesson plans	47%	45%	59%	64%	66%	66%	68%	71%	77%
Manage student records	45%	46%	56%	64%	70%	73%	76%	81%	86%
Track student performance	52%	48%	61%	69%	74%	75%	77%	82%	86%
Assess student performance	NA	NA	55%	64%	69%	70%	72%	78%	82%
Deliver/present instruction	26%	29%	38%	46%	51%	57%	60%	67%	73%
Enroll in online coursework	NA	NA	NA	5%	9%	11%	12%	14%	17%

Table 35, addressing student use of technology, indicates that while students routinely use technology more than they did in 2000, their usage rates generally lag behind those noted for teachers and administrators – except in producing written products and conducting online research, which involve over half of students. Media products increased from 22 to 50 percent, and email to communicate with peers and experts doubled (from 12 to 25 percent).

Table 35

Routine Use of Technology by Students, 2000 – 2008

<u>Technology Function</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
Produce media/presentation products	22%	23%	32%	37%	29%	40%	43%	46%	50%
Produce written products	61%	52%	65%	68%	46%	59%	60%	61%	63%
Conduct online research	57%	49%	59%	63%	NA	53%	56%	58%	61%
Communicate with peers, experts, others	NA	NA	NA	NA	12%	20%	21%	24%	25%
Communicate with parents and students	NA	NA	NA	NA	7%	13%	12%	24%	17%
Enroll in online coursework	NA	NA	NA	NA	7%	2%	2%	4%	4%

Usage item 3 – Technology integration support

Usage item 3 asks building contacts to estimate employee FTE and/or non-employee contact hours related to helping teachers integrate technology into curriculum and instruction. Table 36 summarizes the data reported since 2003.

As indicated in the table, integration assistance has evolved over time. In 2003, the school building administrator and/or a district technology staff person provided such assistance. Since 2006, a building would appear to rely less on district staff, with more integration help provided by the library media specialist and/or other teachers in the building. The proportion of buildings with instructional technology specialists has grown from 24 to 38 percent, paralleling the eMINTS data reported in Training item 3. As more buildings have instructional technology specialists and rely on library media specialists, fewer buildings report technical staff as providing integration support.

Table 36

Building Technology Integration Support by Provider Type, 2003 – 2008

<u>Position Providing Assistance</u>	<u>Percent Buildings Reporting</u>					
	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
School building administrator	53%	57%	53%	54%	50%	49%
Technology coordinator (any)	49%	58%	NA	NA	NA	NA
• District technical staff	NA	NA	47%	54%	44%	42%
• School technical staff	NA	NA	20%	21%	18%	18%
Teacher(s)	46%	48%	52%	55%	52%	56%
Library media specialist	43%	54%	58%	60%	61%	62%
Instructional technology specialist	24%	32%	34%	34%	37%	38%

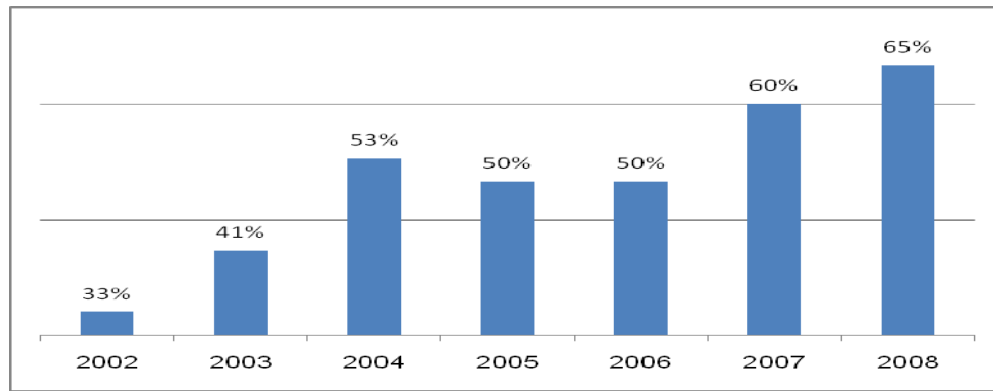
Usage item 4 – Teacher technology integration

Added in 2002, this item asks the building contact person to estimate the percent of teachers who fully integrate technology into curriculum and instruction. Based on the eMINTS instructional model, full integration is defined as the “ability to use instructional strategies that promote authentic project-based learning opportunities, student teamwork, collaboration and communication using technology in the classroom curriculum.”

Table 37 provides data reported from 2002 to the present. As indicated, the percent of teachers able to fully integrate technology in their classroom teaching has almost doubled. In 2002, the median building indicated 33 percent of teacher's fully integrating technology, compared to 65 percent this year.

Table 37

Percent Teachers Integrating Technology, 2002 – 2008



Usage item 5 – Technology-mediated feedback systems

Added in 2002 to align with the 2002-06 state plan, this last item asks about technology-mediated feedback systems in place that are designed to facilitate effective communication between schools and patrons, including students and parents. This item distinguishes between one-way information dissemination (such as a Website or mailing) and interactive systems that help patrons to access and/or provide specific information or feedback back to the school. Table 38 reports on data collected this year, and Table 38 provides longitudinal data, from 2002 to the present.

This year all but two buildings indicate using one or more district or school-supported feedback system. Almost all buildings reported use of email, and three in five reported use of voice mail. New data reported this year includes use of automated calling or texting.

Table 38

Building Use of Technology-mediated Feedback by System Type – 2008

<u>Feedback System</u>	<u>Buildings</u>	<u>Percent</u>
Automated absentee system	574	26%
Electronic bulletin board	553	25%
Email	2,156	96%
Homework hotline via web	383	17%
Homework hotline via telephone	267	12%
Listserves	338	15%
Voice Mail	1,345	60%
Other: 261 Electronic Gradebook (Parent access)		
171 District Website		
108 Auto Call/Text		
39 Blackboard/Moodle sites	620	28%
None	2	2%

As shown in Table 39, since 2002, the prevailing systems – email and voice mail – have remained the same. While at much smaller rates, steady increases are noted in the use of automated systems for absentee reporting, web-based homework hotlines, and listserves.

Table 39**Percent Buildings with Technology-mediated Feedback by System Type,
2002 – 2008**

<u>Feedback System</u>	<u>2002</u>	<u>2003</u>	<u>Percent Buildings</u>		<u>2006</u>	<u>2007</u>	<u>2008</u>
			<u>2004</u>	<u>2005</u>			
Email	39%	89%	94%	94%	95%	95%	96%
Voice mail	26%	47%	47%	50%	54%	57%	60%
Listserv	1%	16%	14%	13%	16%	18%	15%
Automated absentee call system	8%	13%	13%	19%	21%	23%	26%
Homework hotline via telephone	10%	12%	13%	15%	13%	12%	12%
Homework hotline via Web	3%	7%	8%	12%	14%	16%	17%

Turn Page for Section V: Appendix

Appendix A: Census Surveys with Response Totals

Missouri Census of Technology

DISTRICT Level Census (2008)

N= 550

Complete this census form to reflect district technology status as of **March 1**.

Consult the Core Data Manual and [Help](#) file, call (573) 751-8247, or e-mail: instrtech@dese.mo.gov for assistance as needed.

- 1) Year district technology plan was last approved by DESE: [285 \(2006\)](#) [203 \(2007\)](#) [59 \(2008\)](#).
- 2) Board-approved education technology standards and population(s) that must meet the standards. (Check ALL that apply)

STANDARDS	Districts/ LEAs	Percent LEAs
Locally-developed	463	84.2%
Adopted National Educational Technology Standards (ISTE)	250	45.5%
Adopted Standards for Technological Literacy (ITEA)	60	10.9%
Other (specify) _Show-Me Standards (2)	3	0.5%
None	26	4.7%

STUDENT STANDARDS

Grade Span	LEAs	Percent
K-2	472	85.8%
3-5	492	89.5%
6-8	504	91.6%
9-12	412	74.9%
Area Career Center	54	* 100%
None	29	5.3%

STAFF STANDARDS

Staff Type	LEAs	Percent
Administrators	466	84.7%
Teachers	473	86.0%
Support Services	411	74.4%
None	76	13.8%

* All ACCs have student standards

- 3) Estimated total FTE of district-level staff or total hours of those directly responsible for technical maintenance and support of hardware. (Check one in each category)

EMPLOYEES

Status	LEAs	Percent	Average FTE	Median FTE
Yes	517	94%	2.2	1.0
No	33	6%	NA	NA

NON-EMPLOYEES

Status	LEAs	Percent	Average Hours	Median Hours
Yes	214	39%	287	80
No	336	61%	NA	NA

No FTE or Contract hours: [4 Districts](#)

- 4) District-supported administrative systems. (Check ALL that apply)

SYSTEM	LEAs	Percent
Accounting/budget/payroll	539	98%
Class website hosting	351	64%
Communication/email	522	95%
Course scheduling	442	80%
Discipline	468	85%
Distance education	247	45%
Extra-curricular schedule	228	42%
Food Service	476	87%
Grade book	489	89%
Health Service	442	80%
Human resources	233	42%
IEP management	443	81%
Instructional management	197	36%
Inventory	539	62%
Library catalog	502	91%
School safety	173	32%
Student attendance	524	95%
Student fees	313	57%
Student performance	392	71%
Teacher evaluations	200	36%
Technical support	340	62%
Transportation	268	49%
None	0	0%

- 5) All buildings in district are connected through a wide or local area network. [501 / 91.1%](#) Yes [49 / 8.9%](#) No
- 6) Core content area(s) in which technology is integrated. (Check ALL that apply)
[538 / 97.8%](#) Communication Arts [524 / 95.3%](#) Mathematics [531 / 96.5%](#) Science [516 / 93.8%](#) Social Studies
- 7) Estimated percentage of following populations with district-provided email accounts.

GRADES	LEAs	Percent	Median
PreK-2	13	2.4%	100%
3-5	36	6.5%	42%
6-8	60	10.9%	95%
9-12	132	24.0%	20%
None	402	73.1%	NA

STAFF TYPE	LEAs	Percent	Median
Administrators	534	97.1%	100%
Teachers	530	96.4%	100%
Support services staff	509	92.5%	100%
None	16	2.9%	NA

- 8) Estimated percentage of district 8th graders who are technologically literate. [Median = 92%](#)
- 9) Amount budgeted for technology for current year. [\\$162,596,125 \(Average = \\$295,093\) \(median = \\$55,000\)](#)
- 10) Dollar value of district E-rate discount for current year (per FCDLs). [\\$26,166,277 \(average = \\$47,489\) \(Median = \\$5,904\)](#)
- 11) Estimated percentage of E-rate discount used to support education technology. [Median = 50%](#)

Missouri Census of Technology

SCHOOL Building Level Census (2008) N= 2248

PLANNING

- 1) Type of building technology plan: [163 / 7%](#) Stand-alone plan [2068 / 92%](#) Integrated in district plan [17 / 1%](#) No building plan

TRAINING

- 1) Estimated percentage of faculty/staff in the school building at each skill level of education technology use.

FACULTY/STAFF	Beginner	Intermediate	Advanced	Total
Administrator(s)	5%	64%	31%	100%
Teachers	14%	60%	26%	100%
Support services staff	26%	52%	22%	100%

- 2) Number of teachers in the school participating in education technology-related professional development (including eMINTS).

HOURS COMPLETED	Buildings	Percent Buildings	Teachers	Average per Building
0 hours	511	23%	8,845	17
1 to 15 hours	2003	89%	45,577	23
16 to 30 hours	894	40%	7,741	9
More than 30 hours	705	31%	3,916	6
Total			66,079	

Median Teacher: [1 to 15 Hours](#)

- 3) Number of eMINTS-trained teachers in school building.

eMINTS PROGRAMS	None (Buildings)	Completed Year 1 only	Completed Both Years	Total Teachers
Comprehensive eMINTS for Teachers	1,761	509 in 240 Buildings	999 in 356 Buildings	1508
eMINTS for Ed-Tech Specialists	2,151	51 in 36 Buildings	103 in 63 Buildings	154
Other two-year eMINTS programs	2,129	164 in 57 Buildings	335 in 81 Buildings	519

HARDWARE AND SUPPORT

- 1) Estimated total FTE of school building staff or total hours of others directly responsible for technical maintenance and/or support of hardware. (Check all that apply) Averages – All Buildings: [1.09 FTE](#) and [42 Hours](#)

EMPLOYEE TYPE	Total FTE	Number Buildings	Percent Buildings	Average FTE	Median FTE
District staff	1500.4	1817	81%	.83	0.00
School certificated staff	486.5	542	24%	.90	0.50
School non-certificated staff	465.8	459	20%	1.01	1.00
None	NA	137	6%	NA	NA

Estimated total hours of others directly responsible for technical maintenance and/or support of hardware. (Continued)
Average – All Buildings: 42 Hours

NON-EMPLOYEE SERVICE PROVIDER	Total Hours	Number Buildings	Percent Buildings	Average Hours	Median Hours
Students	19,358.5	165	7%	117	25
Parents/community members	3,421.0	15	<1%	228	50
Vendors/contractors	72,537.0	572	25%	127	38
None	NA	1,541	69%	NA	NA

2) Computers by type and location within school building.

COMPUTER PLATFORM	Labs	Instructional Rooms					LMCs	Admin.	Total
		PreK-2	3-5	6-8	9-12	ACC			
APPLE/MAC									
LC series and lower	823	355	307	90	333	40	56	57	2,061
Power Mac series	292	490	298	135	300	37	62	19	1,633
G3	3,265	2,636	2,611	2,053	1,166	197	650	234	12,812
G4 or later	10,771	3,039	4,670	4,604	3,807	502	1,674	925	29,992
PC COMPATIBLE									
486 or earlier	40	109	63	59	141	17	71	30	530
Pentium I or II	1,449	1,607	1,654	871	2,098	189	709	456	9,033
Pentium III	7,251	3,817	4,870	4,192	5,417	826	2,261	1,459	30,093
Pentium IV or later	66,600	17,685	27,207	22,905	37,213	6,730	16,533	17,002	211,875
Celeron	8,381	3,574	5,540	3,673	5,332	409	1,890	1,858	30,657
AMD (under 450 MHz)	5,034	1,448	2,274	1,902	2,565	367	1,273	1,237	16,100
AMD (450 MHz/higher)	529	240	319	249	348	24	228	116	2,053
HANDHELDS	1,274	1,336	5,199	3,304	2,130	183	771	1,602	15,799

Computer Summary Statistics*

Computer Type / Location	Computer Labs	Classrooms						Library Centers	Rooms Total	Admin. Offices	TOTAL
		PreK-2	3-5	6-8	9-12	Area Career	Sub-Total				
DESK/LAPTOPS											
Apple/Mac	15,151	6,520	7,886	6,882	5,606	776	27,670	2,442	45,263	1,235	46,498
PC/PC-comp.	89,284	28,480	41,927	33,851	53,114	8,562	165,934	22,965	278,183	22,158	300,341
Sub-total	104,435	35,000	49,813	40,733	58,720	9,338	193,604	25,407	323,446	23,393	346,839
Percent of All	30.1%	10.1%	14.4%	11.7%	16.9%	2.7%	55.8%	7.3%	93.3%	6.7%	100%
Ratio	8.57	5.82	4.05	5.00	4.86	NA	4.62	NA	2.77	NA	2.58
HANDHELDS											
Handhelds	1,274	1,336	5,199	3,304	2,130	183	12,152	771	14,197	1,602	15,799
TOTAL											
Number	105,709	36,336	55,012	44,037	60,850	9,521	205,756	26,178	337,643	24,995	362,638
Percent of All	29.2%	10.0%	15.2%	12.1%	16.8%	2.6%	56.7%	7.2%	93.1%	6.9%	100%
Ratio	8.46	5.61	3.67	4.62	4.69	NA	4.35	NA	2.65	NA	2.47

* Ratios are based on the 2007-08 K-12 student population: 894,497 [203,703 K-2, 201,880 3-5, 203,472 6-8, and 285,442 9-12]

3) Internet connected and multimedia equipped computers by location within school building.

COMPUTER / CONNECTION TYPE	Labs	Classrooms					LMCs	Admin.	Total
		PreK-2	3-5	6-8	9-12	ACC			
Multimedia-Equipped	100,801	33,230	47,766	38,456	54,687	7,649	24,487	22,970	330,046
Internet-Connected	105,709	33,856	49,750	40,439	59,191	8,314	25,829	24,306	347,403
Wired Connection									
Desktops	84,295	29,620	40,809	32,436	47,010	7,213	21,951	19,830	283,164
Laptops	1,110	1,075	1,943	1,446	1,977	283	634	1,870	10,338
Handhelds	58	415	526	376	171	7	11	205	1,769
Wireless Connection									
Desktops	2,012	281	1,074	396	983	153	333	142	5,374
Laptops	18,118	2,382	5,191	5,344	7,916	610	2,788	1,595	43,944
Handhelds	125	83	207	441	1,134	48	112	664	2,814

Multimedia and Internet Computer Table – Summary Statistics

Computer Type / Location	Computer Labs	Classrooms Rooms						Library Centers	Rooms Total	Admin. Offices	TOTAL
		PreK-2	3-5	6-8	9-12	Career	Sub- Total				
INTERNET											
Number	105,709	33,856	49,750	40,439	59,191	8,314	191,550	25,829	323,097	24,306	347,403
Percent of All	30.4%	9.7%	14.3%	11.6%	17.0%	2.4%	55.1%	7.4%	93.0%	7.0%	100%
Ratio	8.46	6.02	4.06	5.03	4.82	NA	4.67	NA	2.77	NA	2.57
MULTIMEDIA											
Number	100,801	33,230	47,766	38,456	54,687	7,649	181,788	24,487	307,076	22,970	330,046
Percent of All	30.5%	10.1%	14.5%	11.7%	16.6%	2.3%	55.1%	7.4%	93.0%	7.0%	100%
Ratio	8.87	6.13	4.23	5.29	5.22	NA	4.92	NA	2.91	NA	2.71

4) Technology by type and location within school building.

	Labs	Classrooms					LMCs	Rooms Total	Admin.	Total
		PreK-2	3-5	6-8	9-12	ACC				
TOTAL NUMBER OF ROOMS	4,169	14,083	13,318	14,604	18,590	1,887	2,287	68,938	13,148	82,086
Percent rooms with...										
Telephone access	67%	62%	63%	64%	66%	70%	88%	65%	95%	70%
Internet access (wired or wireless)	98%	98%	99%	98%	98%	94%	97%	98%	98%	98%
A multimedia-equipped computer	96%	95%	81%	92%	94%	88%	93%	94%	92%	94%
A multimedia computer connected to Internet	92%	94%	95%	92%	92%	83%	91%	93%	90%	92%
An Internet-connected multimedia computer, projection device, and access to printer	70%	42%	54%	45%	44%	33%	53%	47%	17%	42%

5) Estimated typical (average) timeframe for resolving minor or routine technical problems/repairs. (Check One)

NUMBER WORKING DAYS	Buildings	Percent
1 day	1,002	45%
2 to 3 days	964	43%
4 to 6 days	202	9%
7 to 10 days	49	2%
Over 10 days	27	1%

6) Estimated percentage of computers in working order on a typical (average) day Median = 98%.

INTERNET CONNECTIVITY- DISTANCE LEARNING

1) School building Internet connection by bandwidth and delivery mode. (Check one in each column)

BANDWIDTH	Buildings	Percent
56kb – 384 kb	23	1%
385kb – 1.4mb	154	7%
1.5mb (T1) – 9.9mb	1,171	52%
10mb – 45mb	449	20%
45mb – 100mb	258	11%
>100mb	189	8%
None	1	<1%

DELIVERY MODE	Buildings	Percent
Copper line	689	31%
Fiber	1,373	61%
DSL	89	4%
Satellite	8	<1%
Other: <u>42 Wireless</u>	46	2%
None/Unknown	38	2%

2) Estimated percentage of computers connected to school building LAN (or district WAN) Median = 99%

3) Distance learning system(s) available to students in school building. (Check ALL that apply)

DISTANCE LEARNING SYSTEM	Buildings	Percent
I-TV: two-way interactive (audio and video) television	426	19%
Desktop video conferencing: two-way interactive instruction	342	15%
Web-based online instruction via Internet: non-interactive	1,158	52%
Satellite: one-way instructional video	304	14%
Cable TV: one-way instructional video	1,127	50%
Other: <u>94 Video/United Streaming</u> <u>15 Blackboard/Moodle</u>	144	6%
None	435	19%

TECHNOLOGY USAGE

- 1) Estimated percentage of administrators, teachers, and students routinely using following applications.

APPLICATION	Administrators	Teachers	Students
Educational software	49%	80%	80%
Email	98%	97%	14%
EBSCO host	16%	25%	23%
Electronic encyclopedia	17%	34%	36%
Newsbank	9%	14%	12%

- 2) Estimated percentage of administrators, teachers, and students routinely using computers for following functions.

FUNCTION	Administrators	Teachers	Students
Produce media, web, or multimedia products to demonstrate learning, make presentations	66%	64%	50%
Produce written or print products to demonstrate learning, make presentations	84%	84%	63%
Communicate with peers, experts, others	96%	93%	25%
Communicate with parents and students	88%	81%	17%
Conduct online research	84%	81%	61%
Participate in online courses (this year)	14%	17%	4%
Manage student records (spreadsheet/database)	89%	86%	NA
Track student performance	88%	86%	NA
Assess student performance	78%	82%	NA
Deliver and present instruction	44%	73%	NA
Prepare lesson plan(s)	Na	77%	NA

- 3) Estimated total FTE of staff or others directly responsible for integration of technology into curriculum and instruction.
(Check all that apply) **Overall Averages: 1.21 FTE and 13 Hours**

EMPLOYEE TYPE	Total FTE	Number Buildings	Percent Buildings	Average FTE	Median FTE
Instructional tech specialist	568.2	851	38%	0.67	0.50
Library/media specialist	522.5	1,390	62%	0.38	0.25
School administrator	264.5	1,108	49%	0.24	0.10
Teacher	617.1	1,254	56%	0.49	0.25
School technical staff	233.2	396	18%	0.59	0.50
District technical staff	414.3	955	42%	0.44	0.25
Other: 95 Curriculum Director 59 District Instructional Staff	101.9	221	10%	0.46	0.25
None	NA	134	6%	NA	NA

NON-EMPLOYEE SERVICE PROVIDER	Total Hours	Number Buildings	Percent Buildings	Average Hours	Median Hours
Students	16,497	53	2%	311	10
Regional center/RPDC	1,958	92	4%	21	10
Others: 55 Contractors 6 Parents	10,278	65	3%	158	Na
None	NA	2,050	91%	NA	NA

- 4) Estimated percentage of teaching staff fully integrating technology into curriculum and instruction. **Median = 65%**

- 5) School (or district) supported technology-mediated feedback. (Check ALL that apply)

FEEDBACK SYSTEM	Buildings	Percent
Automated absentee system	574	26%
Electronic bulletin board	553	25%
Email	2,156	96%
Homework hotline via web	383	17%
Homework hotline via telephone	267	12%
Listserve	338	15%
Voice Mail	1,345	60%
Other: 261 Electronic Gradebook (Parent access) 171 District Website 108 Auto Call/Text 39 Blackboard/Moodle sites	620	28%
None	2	2%

